OPPORTUNITIES FOR SOCIAL DESIGN IN NEPAL

Research Thesis

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by

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Introduction

For much of its history, the design industry has been fueled by clients and corporations seeking help with innovation, human factors, and styling. Only in recent years have firms begun pushing to bring design to underserved, underprivileged populations around the world. I became interested in this movement after being exposed to IDEO's Human Centered Design toolkit, a free, online compendium of methods and frameworks for bringing about positive change in underprivileged communities. The participatory design methods introduced in my design research classes with Professor Sanders encouraged me to take up my own project where I could learn to design with people instead of for them.

Purpose: Two Paths

This thesis aims to serve two purposes. The first is to examine design opportunities in rural Nepalese food preservation, the second is to reflect on the research journey that led to the realization of these opportunities and the lessons I've learned along the way. I will first lay out background information on Nepal's current state of affairs and why there is such great need there. I will proceed to outline the methods I used to investigate these needs before analyzing the data gathered and commenting on their effectiveness. Finally, I will detail the three main design directions identified as well as my personal reflection on the end results of this research.

Research Objective

The objective of this research is to gain insight into the needs of Nepali farmers through a combination of exploratory, evaluative and generative co-design methods. The goal is to arrive at design directions and principles to aid NGOs and designers in the creation of

innovative food preservation solutions that are culturally contextualized, economically sustainable, and
feasibly actionable.

Rationale and Potential Benefit

The potential benefits from this research include an increased awareness about the problems facing rural Nepal and hopefully a recognition that design can and should play an integral role in improving quality of life in less developed countries. More broadly, however, I think this thesis stands to help design students who are interested in research and the developing world. Design is vastly underrepresented in the academic research world as I experienced at the various research forums where my work was shoehorned into agriculture and engineering when it was really neither of those. I would consider it very rewarding if this thesis could in any way benefit another design undergraduate trying to conduct research.

State of Nepal

Occupying a strip of mountainous land between the two most populous countries in the world lies the nation of Nepal. Unlike its titanic neighbors, Nepal is a country with little industrial capacity and has one of the lowest levels of urbanization in the world at just 18.2%[1]. To understand the current state of poverty and underdevelopment in Nepal, it is important to understand the historical factors that come into play. As a kingdom that developed in geographical isolation, Nepal was never subjected to the imperial powers that were rampant in India, China, and the rest of the non-Western world. While this no doubt had a positive

[1] Nepal. (2015). In CIA World Factbook. Central Intelligence Agency.

effect on the sovereignty of the country, it did have its downsides. It wasn't until the 1950s that Nepal even became connected to global trade and politics which has been a severe disadvantage for infrastructure and the national economy. More recently, the Maoist insurgency of the late 1990's to the early 2000's has wreaked havoc on the stability of the country. During the ten year civil war, massive funding was shifted from development to military expenditure, further delaying projects in sanitation, road building, and electricity[2]. The Nepal of the 21st century is one that has suffered a great many tragedies but still carries a spirit of optimism and possibility. For those reasons, I became enamored with the idea of conducting design research there.

Exploratory Phase

My personal experiences with Nepal began in May 2013 when I traveled to the country for the first time to conduct exploratory research into the lives and needs of the Nepalese people. My primary methods of conducting research were interviews, observations, and shadowing, all within an AEIOU framework.

The AEIOU framework, developed by Doblin Group, is a framework for observations whereby the researcher evaluates activities, environments, interactions, objects, and users in a particular scenario. I found this tool to be especially useful for organizing my thoughts in the chaotic and unfamiliar settings I found myself in during the course of my trip.

I began my research course in Kathmandu, living with the Khatiwada family on the outskirts of the city in the

[2] Nepal's Transport Sector. (2013). Retrieved January 8, 2015 http://go.worldbank.org/I99TRS72B0

neighborhood of Kapan. Ramesh, my host father was a veteran of the Nepali army and had served on UN Peacekeeping missions in the Democratic Republic of Congo and in Sudan. His wife, Tara was a pre-school teacher and mother to Roshan (13) and Rubina (10), their two children. The Khatiwadas lived in a compound shared with Ramesh's parents above and his younger brother, Dinesh below. I found this extended family living situation to be very common in Nepal.

While there, I participated in the family's meals, chores, and routines to gain an appreciation for their daily routine. During the days, I accompanied the two children to school and taught English to grades 3-6. This position gave me a glimpse into the operations of school systems and public life- sometimes a very different world from the private sphere. The family owned two farms, a dairy farm close to their home and a larger vegetable and chicken farm approximately three miles from where they lived. I would accompany 13 year old Roshan to the dairy every day to get milk for the family and help facilitate the sale of excess milk to others in the community. With 16 cows and 8 calves, there was enough milk produced for several dozen locals to fill up.

Whereas the Khatiwadas operated the dairy directly, their other farm was managed by a husband and wife that lived in a small shack on the property. I was able to visit several times on motorcycle to get a tour of the several acre plot and see for myself the tomato, spinach, pepper, and squash crops. In addition, I was able to see the 100 or so chickens being raised for the market. The Khatiwadas were in the midst of evaluating the benefits of keeping chickens and determining if they would incorporate more livestock into their farming.

After three weeks in Kathmandu, I flew to Lukla in the high Himalayan region of the country for a different perspective on needs. Far from the hustle and bustle of Kathmandu, traditional life in the highlands was nonetheless being meshed with burgeoning tourism and adventure travel industries. Ranging from 10,000-16,000 feet above sea level, agriculture was sparse and mostly limited to yak, ox, and goat herding. Over the course of two weeks, I stayed in the villages of Dingboche, Tengboche, Gorak Shep, Pheriche, and Phakding and was able to talk to locals with the help of my guide, Resham.

The scarcity of natural resources paired with a rapidly emerging service economy in the Himalaya was in a way an exaggerated microcosm of what I saw in Kathmandu. Traditional jobs in agriculture, cottage industry, and manufacturing are being supplanted by jobs that provide for and cater to the throngs of Europeans, Americans and Australians that come to Nepal looking for adventure and a desire to get in touch with what they see as quaint traditional societies.

I returned to the U.S. in June but was able to continue working with Volunteers Initiative Nepal and the MountainFund to analyze my findings. I formalized a co-design team comprised of Bhupi Ghimire and Dinesh Khatiwada of VIN along with Scott MacLennan of MountainFund. Using email and shared Google docs, we communicated on a regular basis to discuss potential directions for the project. Every two weeks, I sent a co-design activity to encourage active participation in the design process. Examples include a ranking activity for establishing a hierarchy of development needs and a fill in the blanks exercise for agricultural issues. While I sometimes had difficulties getting responses, the co-design team provided many valuable insights, especially when comparing the responses of native Nepali members versus

Mr. MacLennan. Ghimire and Khatiwada tended to favor addressing issues of systemic change while MacLennan leaned towards small community efforts that could then be patterned elsewhere.

In fall of 2013 it became clear that agriculture, more specifically, food preservation was the most compelling direction for the project to go in. With this in mind, I began developing a methodology for conducting evaluative research focused on farmers and food practices. Now that I had a context and background understanding of Nepali life I could approach the topic of food preservation in depth.

Evaluative Phase

In December of 2013, I departed for Nepal again. This time, my goal was to focus on agriculture- specifically on food preservation methods as they existed in rural areas. I was able to stay with the Khatiwadas again and use their home as my base of operations. To kick-off my study, I returned to the Khatiwada chicken farm with Ramesh. I learned more about his crop strategies and the problems he was running into. To prevent spoilage, they had begun picking only what they were going to eat that day and leaving the rest in until it was needed. This particularly applied to spinach and other leafy greens that were susceptible to wilting.

My next study sites were Mankhu and Goganpani, two villages in the rural Dhading district. The MountainFund operates a farm in Mankhu where I would work and learn food preservation techniques firsthand. Some of the activities I shadowed and participated in included threshing feed grass, crushing and milling grain, extracting tomato seeds, pickling vegetables, and harvesting bean crops. In the evenings, I observed the cooking process and got to see how food was prepared on the farm as opposed to in Kathmandu. With greater access to fresh foods and less access to markets, ingredients were either very recently procured from the fields or preserved for a long time since the last market shop. In addition to preserved market ingredients, there were a number of home preserved ingredients including pickles, dried herbs, and spices. They were used more sparingly than fresh ingredients as the farm only had a limited supply and it was unclear when they might be able to restock. The typical meal always included rice and lentils and was accompanied by curried potatoes, spiced green beans, spinach, and rarely some chicken or goat.

Between farm chores, usually during the hot middle of the day, I was able to venture out and visit neighboring farmers during their breaks from the midday sun. In Goganpani, I met a young man named Gautam who used his savings to purchase equipment to set up a grain mill in town. Instead of charging his neighbors money to use it, he simply keeps a portion of the crushed grains in exchange. This has allowed him to plant other crops on his own land and provided him with unique access to a varied crop harvest. In these remote villages where the nearest proper town is hours away on foot, bartering appears to play a big role in exchange and trade.

My last study site was the village of Jitpur, the village that has been the focus of Volunteer Initiative Nepal's efforts to introduce sanitation and public health practices to rural communities. Together with my translator, I spent a day talking with farmers and touring their fields. It was a busy but very successful day with ten different participants interviewed. Compared to Goganpani and Mankhu, Jitpur was closer to Kathmandu and connected to the city via a major highway. This gave it a unique advantage in terms of access to outside food and tools. Bartering was less common here and many people were able to sell their surpluses in Kathmandu as opposed to trading within the village.

At the conclusion of my two weeks, I felt like I had learned a great deal about farming practices and food preservation. Looking forward, I began developing a methodology that would enable me to define a set of principles that could be used to guide the design of solutions to the needs I had discovered. It was clear that I would have to engage users in co-creation activities if I wanted to gain real insights

Generative Phase

Thus began my final phase, turning from needs and looking towards solutions. Given the scope of this project and the limited time I could spend in Nepal, my goal was to at least set forward a number of design principles that could guide designers and NGOs in the future. I wanted to get a sense of their desires for the future and what needs they felt were most pressing in terms of food preservation.

In order to do this, I set about developing a participatory exercise that would allow participants to express their visions for the future of their farms and convey more latent needs. My main

interests were finding preservation methods that were compatible with traditional practices and identifying local resources that could be utilized in preservation activities, especially common objects that could be repurposed. I was inspired by crafting and DIY projects where people took everyday disposables and turned them into something novel and useful: a woman who used egg cartons to plant her garden, a boy who used water bottles to make bird feeders.

The exercise was to be conducted in two parts, a priming exercise and a co-creation session. An initial sensitizing session would encourage participants to recall food preservation experiences and to think critically about the challenges and successes they have encountered in the past. I would base this off the results of my evaluative research from previous trips along with my findings from secondary research on preservation methods. In addition to sensitizing participants, I would also benefit by further feedback on those initial observations.

During this session, I would also take the opportunity to present the participants with a primer on the various preservation technologies being considered. This would ensure that there was a baseline understanding of each of the preservation methods and that there was no misunderstanding about a methods potential benefits and detractors. I would primarily cover drying, vacuum sealing, chemical preservation (pickling), and canning. I would leave the participant with a request to collect common materials and waste that might be repurposed. This would help engage them and give them a sense of shared ownership over the co-design process.

A week later, I would return to the participant's home and conduct the actual co-creation session. By combining the found objects supplied by the participant with a provided tool kit of paper, clay, pipe cleaners, and stickers we would work together to create symbolic prototypes of potential solutions. By keeping the solutions at a symbolic level, the goal was to facilitate a conversation about food preservation that would reveal experiential knowledge in an organic, expressive fashion.

Due to an unfortunate illness, I was unable to complete this research method to the degree at which it might have revealed significant data. Based on the preliminary sessions, however, I believe that this approach has the potential to yield great benefits and could be a very effective way of creating innovative, culturally contextualized solutions in the future. Having developed a full methodology and not being able to implement it to the highest degree was a disappointment but I am glad to have been able to at least taken it as far as I was able.

After analyzing my findings from the three phases of research, I come away with three design directions. (1) The importance of preserving a variety of crops, (2) the role of cuisine and tradition in developing new preservation strategies, and (3) the relationship between food preservation and farm size. First, I found that while many methods are effective at preserving one type of crop (selective harvesting for spinach, pickling for radishes), there are very few that can address a range of food items. Malnutrition levels in Nepal remain critical, a fact that may be related to this lack of variety in preserved foods. A food preservation method that could safely prolong the edibility of foods with different nutritional value would help promote diet diversity and fight malnutrition. Secondly, modern advances in preservation technology

would need to seriously consider the importance of traditional cuisine if they want to be adopted. One thing that I learned from staying at the MountainFund farm was that traditional food preservation often lends the signature flavor and texture to a dish. the face-puckering sourness of Nepali pickle and the savory spice of Gundruk can all be attributed to how those foods were preserved. While refrigeration may be a more efficient way of preserving spinach than drying it out over the course of a week, the average farmer values the heritage of the gundruk made with that spinach more than he values the gains in efficiency from refrigeration. Finally, in a country so at the whim of seasonal rains, food preservation solutions have to take into account the fact that most Nepali farmers straddle the line between surplus and deficit, plentiful harvest and going hungry. This means that preservation strategies must be modular and scalable- working just as well for when a family has fallen on lean times as when they are overwhelmed and trying to move crops to market.

What I learned is that the critical aspect of designing with people is the realization that you are not- nor should not feel compelled to become- an expert of a subject area. Rather, you must strive to become a skilled facilitator of a process that allows expert users to express their concerns, needs, and aspirations in a way that can inform and shape solutions.